

Listing of Claims

This listing of claims will replace all prior versions and listings of claims in this application.

Claim 1. (Withdrawn) A method of fabricating a board from milled straw comprising the steps of:

blending the milled straw with a binder to form a mixture;

forming the mixture into a mat with sufficient size to achieve a predetermined board thickness and density; and

pressing and curing the mat into the board.

Claim 2. (Withdrawn) The method as recited in claim 1, wherein the milled straw is rice straw.

Claim 3. (Withdrawn) The method as recited in claim 1, further comprising the step of removing a portion of fines from the milled straw prior to blending.

Claim 4. (Withdrawn) The method as recited in claim 1, further comprising the step of milling straw.

Claim 5. (Withdrawn) The method as recited in claim 1, wherein the milled straw has an average longitudinal length of approximately 0.125 inches to 1.5 inches.

Claim 6. (Withdrawn) The method as recited in claim 1, further comprising the step of controlling the moisture content of the milled straw from approximately 1% to 12% of the milled straw weight.

Claim 7. (Withdrawn) The method as recited in claim 6, wherein the moisture content is controlled with an oven.

Claim 8. (Withdrawn) The method as recited in claim 1, further comprising the step of blending the mixture with a fire retardant material comprising one or more of: organic phosphates, borates, sodium silicates, aluminum trihydrates, or rice hulls.

Claim 9. (Withdrawn) The method as recited in claim 8, wherein the binder and the fire retardant material are added at a rate of approximately 2% to 20% of the milled straw weight on a dried basis.

Claim 10. (Withdrawn) The method as recited in claim 8, wherein the milled straw weight is determined by a scale with a feedback control mechanism to regulate the rate of the binder and the fire retardant material.

Claim 11. (Withdrawn) The method as recited in claim 1, wherein the blending is performed in a high-speed blender.

Claim 12. (Withdrawn) The method as recited in claim 1, wherein the board is attached to one or more door skins.

Claim 13. (Withdrawn) A fire resistant board comprising:
milled rice straw;
a resin binder; and
a fire retardant material comprising one or more of an organic phosphate, a borate, sodium silicate, aluminum trihydrate, or rice hulls.

Claim 14. (Withdrawn) The board as recited in claim 12, wherein the milled rice straw has an average longitudinal length of about 0.125 inches to about 1.5 inches.

Claim 15. (Withdrawn) The board as recited in claim 12, wherein the resin binder is an isocyanate resin.

Claim 16. (Withdrawn) The board as recited in claim 12, wherein the resin binder comprises between about 2% and about 10% of the weight on an oven dry basis.

Claim 17. (Withdrawn) The board as recited in claim 12, wherein the fire retardant material comprises between about 2% and about 20% of the weight on an oven dry basis.

Claim 18. (Withdrawn) The board as recited in claim 12, wherein the board is attached to one or more door skins.

Claim 19. (Withdrawn) The board as recited in claim 12, wherein the board is attached to a doorframe.

Claim 20. (Currently Amended) A fire resistant door comprising:
an inner door core having a fire resistance rating of at least forty five minutes comprising milled rice straw fiber segments having average length of between approximately 0.125[[-]] and 1.5 inches after milling which size provides the at least forty-five minutes fire resistance rating in a cured polyisocyanate resin matrix comprising between 2% and 10% by weight of the inner door core; and
a doorframe comprising a fire-resistant material.

Claim 21. (Canceled)

Claim 22. (Currently Amended) The door as recited in claim 20, wherein the inner door core further comprises a fire retardant material selected from the group consisting of ~~comprising~~ one or more of: an organic phosphate, a borate, sodium silicate, aluminum trihydrate, ~~or~~ rice hulls, and combinations thereof.

Claim 23. (Original) The door as recited in claim 20, further comprising one or more door skins.

Claim 24. (Canceled)

Claim 25. (Canceled)

Claim 26. (Currently Amended) The door as recited in claim 20, wherein the polyisocyanate resin is selected from the group consisting of ~~further comprises~~ one or more of: phenol, polyisocyanate and ~~or~~ a urea formaldehyde.

Claim 27. (Currently Amended) A fire resistant door comprising:
an inner door core having a fire resistance rating of at least forty five minutes comprising milled rice straw fiber segments having a length of at least about 0.125 inches after milling which size provides the at least forty-five minutes fire resistance rating in a matrix of cured ~~polyisocyanate~~ resin comprising at least 2% and less than 10% of the weight of the inner door core; and
a doorframe comprising a fire-resistant material.

Claim 28. (Canceled)

Claim 29. (Currently Amended) The door as recited in claim 27, wherein the polyisocyanate resin is selected from the group consisting of ~~further comprises~~ one or more of: phenol, polyisocyanate and ~~or~~ a urea formaldehyde.

Claim 30. (Canceled)

Claim 31. (Currently Amended) The door as recited in claim 29, wherein the resin is selected from the group consisting of RUBINATE 1840TM, a polymethylene polyphenylene ester of isocyanic acid, and PAPI-94TM ~~comprises phenol.~~

Claim 32. (Currently Amended) The door as recited in claim 29, wherein the fire resistant door includes one or more door skins disposed on one or more surfaces of the inner door core ~~resin comprises urea formaldehyde.~~

Claim 33. (Currently Amended) A fire resistant door comprising:

an inner door core having a fire resistance rating of at least forty five minutes comprising milled rice straw fiber segments less than 3.0 inches after milling which size provides the at least forty-five minutes fire resistance rating in a matrix of cured polyisocyanate resin selected from the group consisting of ~~comprising~~ one or more of polyisocyanate, phenol or a urea formaldehyde, the cured ~~polyisocyanate~~ resin comprising between 2% and 10% of the weight of the inner door core; and

a doorframe comprising a fire-resistant material.

Claim 34. (Canceled)

Claim 35. (Canceled)

Claim 36. (Currently Amended) The door as recited in claim 33, wherein the cured resin is selected from the group consisting of RUBINATE 1840TM, a polymethylene polyphenylene ester of isocyanic acid, and PAPI-94TM ~~comprises phenol.~~

Claim 37. (Currently Amended) The door as recited in claim 33, wherein the fire resistant door includes one or more door skins disposed on one or more surfaces of the inner door core ~~cured resin comprises a urea formaldehyde.~~

Claim 38. (Currently Amended) The door as recited in claim 33, wherein the inner door core further comprises a fire retardant material selected from the group consisting of ~~comprising~~ one or more of: an organic phosphate, a borate, sodium silicate, aluminum trihydrate, ~~or~~ rice hulls, and combinations thereof.

Claim 39. (Currently Amended) The door as recited in claim ~~27~~ 33, wherein the inner door core ~~door frame~~ further comprises a fire retardant material selected from the group consisting of ~~comprising~~ one or more of: an organic phosphate, a borate, sodium silicate, aluminum trihydrate, ~~or~~ rice hulls, and combinations thereof.